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| TO: | Derek L. Woods Attorney Office of Petitions | | |
| FROM: | John A. Krause | | |
| RE: | Renewed Petition Under 37 CFR 1.181(a) and 1.137(b) Re: Application No. 10/615,289 | | |
| FAX NO.: | (571) 273-8300 | | |
| DATE: | September 8, 2008 | NO. OF PAGES: | 21 |
| | | <small>(including cover page)</small> | |
| TIME: | SENT BY: | | |

MESSAGE

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FITZPATRICK NY

03500.017379.

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

| | | |
|-----------------------------|---|---------------------------|
| In re Application of: |) | |
| | : | Attention: Derek L. Woods |
| MASAHIKO KUBOTA ET AL. |) | Attorney |
| | : | Office of Petitions |
| |) | |
| Application No.: 10/615,289 | : | |
| |) | |
| Filed: July 9, 2003 | : | |
| |) | |
| For: METHOD FOR PRODUCING | : | |
| FINE STRUCTURED MEMBER, |) | |
| METHOD FOR PRODUCING | : | |
| FINE HOLLOW STRUCTURED |) | |
| MEMBER AND METHOD FOR | : | |
| PRODUCING LIQUID |) | |
| DISCHARGE HEAD | : | September 8, 2008 |

Director for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RENEWED PETITION UNDER 37 CFR 1.181(a) AND 37 C.F.R.1.137(b)
FOR WITHDRAWAL OF NOTICE OF ABANDONMENT, AND
RESUBMISSION OF AMENDMENT WHICH WAS DEEMED TO BE NON-COMPLIANT

Sir:

BACKGROUND

In an Office Action dated October 1, 2004, issued in this application, many of the claims were designated as being allowable. Applicants filed an Amendment, and a request for approval of proposed drawing corrections, both dated January 3, 2005, believing that the application would then be allowed and that corrected drawings would be submitted upon receiving authorization to amend the drawings as proposed. In response, the Patent Office issued a Notice of Non-Compliant Amendment on March 15, 2005, stating that the replacement of one

equation with another was not permissible. Applicants filed a Response to that Notice on April 15, 2005 to show the whole paragraph in which equations were corrected, but did not note that the drawing changes were implicitly approved. Subsequently, the file was apparently lost in the PTO, and over two years later a Second Notice of Non-Compliant Amendment, dated May 31, 2007, was issued.

That Notice pointed out that the listing of claim amendments did not include the notation "1.-23. (Cancelled)". The objection referred to in that Notice was responded to on June 8, 2007. Then, a third Notice was received incorrectly stating that amended paragraphs did not include markings, and stating that corrected drawings did not include the legend "Replacement Sheets". In response it was pointed out that the amended paragraphs did in fact include markings as indicated on the last four pages of the 22 page electronic transmission dated June 8, 2007. In this regard, there was no additional paper showing corrections to the Abstract, since there were no changes made to the Abstract except to join two paragraphs as one, as stated in the Amendment.

A fourth Notice of Non-Compliance dated August 29, 2007 was issued, stating that the amended paragraphs did not have markings, and again requesting Replacement Sheet drawings. In response, the appropriate drawings were filed and the marked-up amended paragraphs were again pointed out.

The Patent and Trademark Office then issued a Notice of Abandonment, and after reading that Notice it was realized for the first time that what the Examiner was requesting was our version of the January 3, 2005 Amendment, wherein the changes to the equations appeared with their entire paragraphs in the body of the Amendment showing the corrections therein, rather than in the attached marked-up sheets.

RENEWED PETITION UNDER 37 CFR 1.181(a) AND 1.137(b)

The alleged abandonment was unintentional. Moreover, this fact is apparent from the sequence of events set forth above. In each response filed in response to the various Office Actions, the undersigned attempted to comply with and satisfy the Examiner's requirements and to overcome the objections to the previous response.

Further in this regard, there remains disagreement as to the sufficiency of the responses, in that the undersigned was unaware that the submission of marked up sheets showing the claim amendments was, or is, improper. Accordingly, it is believed that this Petition is proper under 37 CFR 1.181(a). However, if the use of such attached sheets to show the mark-ups is improper, and if the requested amendments must be presented before the signing page, then it is requested that this Petition for unintentional abandonment be accepted under 37 CFR 1.137(b), and that the requisite fee be charged to the Deposit Account noted herein and noted in the previously filed Petition.

Accordingly, in the following pages that Amendment of January 3, 2005 has been repeated, wherein the marked-up version of the equations, together with the paragraphs in which they appear, are included in the body of the Amendment.

For these various reasons, it is respectfully requested that the Notice of Abandonment be withdrawn.

SUMMARY

Each action mailed by the PTO was promptly responded to, wherefore it is clear that there never existed any intent by Applicants or their undersigned counsel to abandon the application. Moreover, it was the undersigned's intent, in each response, to comply with the Examiner's requirements and to overcome all rejections to the previous response.

If any fees are required, please charge Deposit Account 50-3939.

AMENDMENT

Sir:

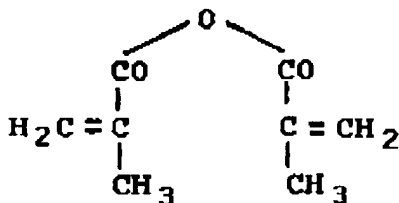
In response to the Office Action dated October 1, 2004, please amend the
above-identified application as follows:

SPECIFICATION AMENDMENTS:

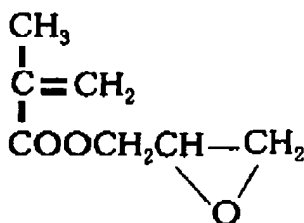
Please replace the present ABSTRACT OF THE DISCLOSURE with the following, wherein the ABSTRACT is presented as a single paragraph.

Please replace the paragraph bridging pages 17 and 18 with the following, wherein an attachment hereto is marked up to show the changes made to that paragraph:

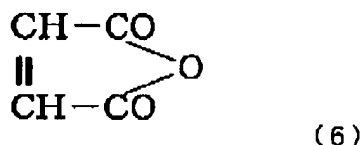
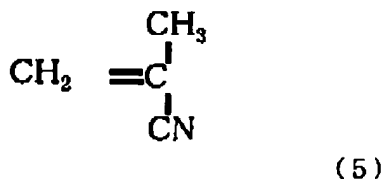
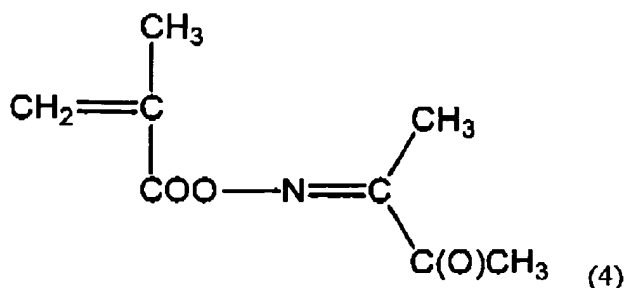
As a factor for expanding the sensitivity region, there can be selectively employed a structure having a function of expanding the photosensitive wavelength region, and there can be advantageously utilized a monomer unit obtained by copolymerizing a monomer capable of expanding the sensitivity region toward a longer wavelength side as represented by following formulas (2) to (6):



(2)



(3)



Please amend the paragraph appearing at Page 27, which includes lines 9 and 10 thereof, to read as follows:

Then, after the removal of the covering resin 7 by dissolution the mold pattern 3 is irradiated, as shown in Fig. 1E, by an ionizing radiation of a wavelength of 300 nm or less across the liquid flow path in structure member 4 constituted of a hardened portion by the pattern exposure to the negative-working photosensitive material layer. Such irradiation intends to decompose the crosslinked positive-working resist constituting the mode pattern 3 to a lower molecular weight, thereby enabling easy removal thereof.

Please replace the paragraph bridging pages 45 and 46 with the following, wherein an attachment hereto is marked up to show the changes made to that paragraph:

Then, on the rear surface of the processed substrate, an etching mask having an

aperture of a width of 1 mm and a length of 10 mm was prepared with a polyetheramide composition (HIMAL, manufactured by Hitachi Chemical Co.). Then the substrate was subjected to an anisotropic etching by immersion in a 22 wt.% TMAH aqueous solution maintained at 80°C, thereby forming an ink supply aperture 210. In this operation, in order to protect the water repellent layer 5 which also repels ink from the etching solution, the anisotropic etching was conducted after coating a protective film (OBC manufactured by Tokyo Oka Industries Co.; not shown) on the ink repellent layer.

CLAIM AMENDMENTS:

Please cancel Claims 1-23 and amend Claims 32, 41-48, and 50, as follows:

1.-23. (Canceled)

24. (Original) A method for producing a fine hollow structured member on a substrate comprising:

a step of forming a positive-working photosensitive material on a substrate;

a step of heating the layer of said positive-working photosensitive material thereby crosslinking said positive-working photosensitive material layer;

a step of executing an irradiation with an ionizing radiation of a first wavelength region capable of decomposing said crosslinked positive-working photosensitive material layer on a predetermined area of said crosslinked positive-working photosensitive material layer; and

a step of removing, by a development, the area irradiated by the ionizing radiation of said crosslinked positive-working photosensitive material layer from the substrate, thereby obtaining a mold pattern formed by a non-irradiated area by the ionizing radiation of said crosslinked positive-working photosensitive material layer;

a step of forming a covering resin layer, formed by a negative-working photosensitive material sensitive to a second wavelength region, in a position covering at least a part of the mold pattern on said substrate;

a step of irradiating said covering resin layer with an ionizing radiation

of the second wavelength region thereby hardening said covering resin layer; and

a step of removing, by dissolution, the mold pattern covered by said hardened covering resin layer from the substrate thereby obtaining a hollow structure corresponding to said mold pattern;

wherein said positive-working photosensitive material includes a ternary copolymer containing methyl methacrylate as a main component, methacrylic acid as a thermally crosslinkable factor and a factor for expanding a sensitivity region for said ionizing radiation; and

said first wavelength region and said second wavelength region do not overlap mutually.

25. (Original) A method for producing a fine hollow structured member according to Claim 24, wherein the crosslinking by said heat treatment is caused by a dehydration condensation reaction.

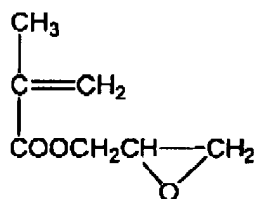
26. (Original) A method for producing a fine hollow structured member according to Claim 24, wherein said factor for expanding the sensitivity region is methacrylic anhydride.

27. (Original) A method for producing a fine hollow structured member according to Claim 26, wherein said ternary copolymer includes methacrylic acid in a proportion of 2 to 30 wt.% with respect to said copolymer, and is prepared by a radical polymerization of cyclized polymerization type at a temperature of 100 to 120°C employing an azo compound or a

peroxide as a polymerization initiator.

28. (Original) A method for producing a fine hollow structured member according to Claim 26, wherein said ternary copolymer has a weight-averaged molecular weight within a range from 5,000 to 50,000.

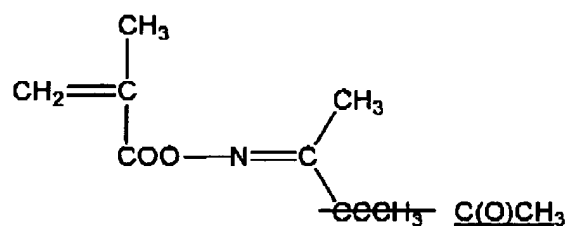
29. (Original) A method for producing a fine hollow structured member according to Claim 24, wherein said factor for expanding the sensitivity region is glycidyl methacrylate represented by a following formula:



30. (Original) A method for producing a fine hollow structured member according to Claim 29, wherein said ternary copolymer includes methacrylic acid in a proportion of 2 to 30 wt.% with respect to said copolymer, and is prepared by a radical polymerization at a temperature of 60 to 80°C employing an azo compound or a peroxide as a polymerization initiator.

31. (Original) A method for producing a fine hollow structured member according to Claim 29, wherein said ternary copolymer has a weight-averaged molecular weight within a range from 5,000 to 50,000.

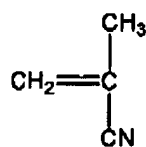
32. (Currently Amended) A method for producing a fine hollow structured member according to Claim 24, wherein said factor for expanding the sensitivity region is methyl 3-oxyimino-2-butanone methacrylate represented by a following formula:



33. (Original) A method for producing a fine hollow structured member according to Claim 32, wherein said ternary copolymer includes methacrylic acid in a proportion of 2 to 30 wt.% with respect to said copolymer, and is prepared by a radical polymerization at a temperature of 60 to 80°C employing an azo compound or a peroxide as a polymerization initiator.

34. (Original) A method for producing a fine hollow structured member according to Claim 32, wherein said ternary copolymer has a weight-averaged molecular weight within a range from 5,000 to 50,000.

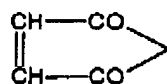
35. (Original) A method for producing a fine hollow structured member according to Claim 24, wherein said factor for expanding the sensitivity region is methacrylonitrile represented by a following formula:



36. (Original) A method for producing a fine hollow structured member according to Claim 35, wherein said ternary copolymer includes methacrylic acid in a proportion of 2 to 30 wt.% with respect to said copolymer, and is prepared by a radical polymerization at a temperature of 60 to 80°C employing an azo compound or a peroxide as a polymerization initiator.

37. (Original) A method for producing a fine hollow structured member according to Claim 35, wherein said ternary copolymer has a weight-averaged molecular weight within a range from 5,000 to 50,000.

38. (Original) A method for producing a fine hollow structured member according to Claim 24, wherein said factor for expanding the sensitivity region is fumaric anhydride represented by a following formula:



39. (Original) A method for producing a fine hollow structured member according to Claim 38, wherein said ternary copolymer includes methacrylic acid in a proportion of 2 to 30 wt.% with respect to said copolymer, and is prepared by a radical polymerization at a temperature of 60 to 80°C employing an azo compound or a peroxide as a polymerization

initiator.

40. (Original) A method for producing a fine hollow structured member according to Claim 38, wherein said ternary copolymer has a weight-averaged molecular weight within a range from 5,000 to 50,000.

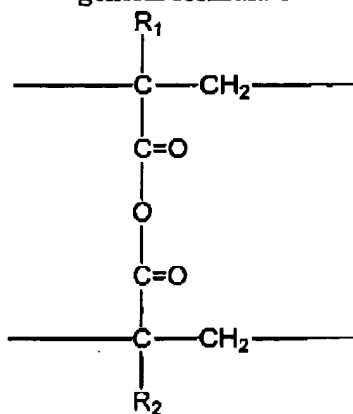
41. (Currently Amended) A method for producing a fine hollow structured member according to Claim 24, wherein a positive-working photosensitive material includes a photodegradable resin having at least a carboxylic acid anhydride structure.

42. (Currently Amended) A method for producing a fine hollow structured member according to Claim 41, wherein the positive-working photosensitive material is an acrylic resin which is subjected to an intermolecular crosslinking through the carboxylic acid anhydride structure.

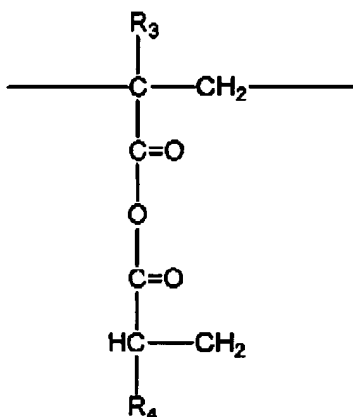
43. (Currently Amended) A method for producing a fine hollow structured member according to Claim 42, wherein the positive-working photosensitive material is an acrylic resin having an unsaturated bonding in a side chain.

44. (Currently Amended) A method for producing a fine hollow structured member according to Claim 42, wherein the positive-working photosensitive material includes a structural unit represented by following general formulas 1 and 2:

general formula 1



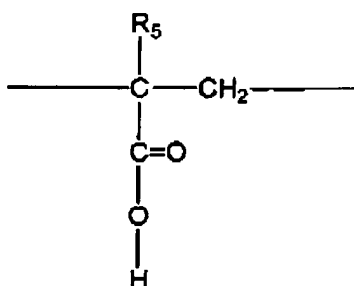
general formula 2



wherein R_1 to R_4 , which may be mutually same or different, each represents a hydrogen atom or an alkyl group with 1 to 3 carbon atoms.

45. (Currently Amended) A method for producing a fine hollow structured member according to Claim 44, wherein the positive-working photosensitive material includes a structural unit represented by a following general formula 3;

general formula 3



wherein R₅ represents a hydrogen atom or an alkyl group with 1 to 3 carbon atoms.

46. (Currently Amended) A method for producing a fine hollow structured member according to Claim 24, wherein the first wavelength region is of a shorter wavelength than the second wavelength region.

47. (Currently Amended) A method for producing a fine hollow structured member according to Claim 24, wherein said negative-working photosensitive material includes an epoxy resin as a principal component.

48. (Currently Amended) A method for producing a liquid discharge head comprising steps of forming a mold pattern with a removable resin in a portion where a liquid flow path is to be formed on a substrate on which a liquid discharge energy generating element is formed; coating and hardening a covering resin layer on said substrate so as to cover said mold

pattern; and removing by dissolution said mold pattern thereby forming a liquid flow path having a hollow structure;

wherein said liquid flow path is formed by a method for producing a fine hollow structure according to Claim 24

49. (Original) A method for producing a liquid discharge head according to Claim 48, wherein a developing liquid containing at least:

- 1) a glycol ether having 6 or more carbon atoms and miscible with water in an arbitrary ratio;
- 2) a nitrogen-containing basic organic solvent; and
- 3) water

is used for developing said mold pattern.

50. (Currently Amended) A method for producing a liquid discharge head according to Claim 49, wherein said glycol ether is ethylene glycol monobutyl ether and/or diethylene glycol monobutyl ether.

51. (Original) A method for producing a liquid discharge head according to Claim 50, wherein said nitrogen-containing basic organic solvent is ethanolamine and/or morpholine.

REMARKS

In response to a Notice of Non-Compliant Amendment, this Amendment is being refiled again, to include the line "1.-23. (Canceled)" on page 7, immediately following the request to cancel those claims.

This is to acknowledge that Claims 24-31 and 35-40 were allowed in the above-identified Office Action, and that Claim 50 was merely objected to. By this response, Applicants have cancelled rejected Claims 1-23, while amending Claims 32, 41-48, and 50, so that all of the remaining claims are believed to be in condition for allowance.

Referring again to the Office Action, and particularly to the numbered paragraphs thereof, Applicants' comments are as follows:

In response to paragraphs 1 and 2, Applicants have submitted a form of the Abstract which is set forth as a single paragraph.

The spelling error pointed out in paragraph 3, with regard to Claim 50 has been corrected.

With respect to the drawings, as referred to in paragraphs 4-10, Applicants have submitted a separate drawing amendment, and upon receiving an acceptance of that drawing amendment from the Examiner, corrected drawings will be prepared and filed.

Specifically, with reference to paragraphs 4 and 5 of the Office Action, reference numeral "1" in Fig. 1A has been changed to "201", and the reference numerals in Fig. 2 have been deleted.

In response to the Examiner's inquiry as set forth in paragraph 6 of the Office Action, this is to note that Applicants' proposed Drawing Amendment has changed Figs. 1D and 1E to include reference numeral "4".

Paragraph 7 of the Office Action refers to the phrase "liquid flow path structure member 4" at lines 9-10 of Page 27 of the Specification. That phrase on page 27 has been changed as a result of the foregoing Amendment to read --liquid flow path in structure member 4--.

In paragraph 8 of the Office Action it was pointed out that reference numeral "209" was not used in Figs. 1A through 1E of the Drawing, although that reference numeral is referred to in the Specification regarding those drawing figures. Accordingly, the accompanying proposed Drawing Amendment has added reference numeral "209" to each of Figs. 1D and 1E.

In paragraph 9 of the Office Action an objection is noted wherein the "water repellant layer 5" is referred to on page 45, lines 24 and 25 as "the ink repellant layer 5". This quoted phrase has now been amended to read --the water repellant layer 5 which also repels ink,--

Paragraph 10 of the Office Action points out that the reference numeral "7" is used for one element on pages 26 and 27 of the Specification, and for an element described differently on page 45. To remedy this apparent discrepancy, the numeral "7" has been deleted from page 45.

The objection to Claim 15 as set forth in paragraph 11 is now moot because Claim 15 has been cancelled. Similarly, the problem raised in paragraph 13 is now moot because Claims 9-11 have been cancelled. Further in this regard, however, the Examiner noted that the same problem exists with respect to Claims 32-34 in that the formula set forth in Claim 32 appeared to be in error. In this regard, Applicants have amended Claim 32 to change the last expression in the claim, namely, "CCCH₃" to read --C(O)CH₃--.

Applicants have remedied the objection set forth in paragraph 14 of the Office Action by cancelling Claims 18-22 and deleting the word "first" from each of Claims 41-45. As

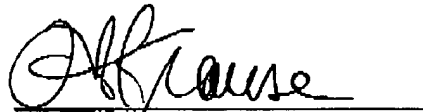
recognized by the Examiner in paragraph 15, Claim 46 should have been dependent on Claim 24, and pursuant to paragraph 17 of the Office Action Claim 47 has also been amended to depend from Claim 24.

Finally, the claims which were rejected in view of the prior art have all been cancelled.

For all these reasons Applicants believe that the application is now in condition for allowance, wherefore the issuance of a formal Notice of Allowance is solicited.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address given below.

Respectfully submitted,



John A. Krause
Attorney for Applicants
Registration No. 24,613

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